

# Mobile phone users who talk longer do not have a higher risk of brain tumors, international study finds

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A large international research study, COSMOS, initiated by Karolinska Institutet, Stockholm and Imperial College London, has studied more

than 250,000 mobile phone users to investigate whether those who use mobile phones extensively and over a long time-period have a higher risk of brain tumors than others. The study, [published](#) in *Environment International*, found no link between mobile phone use and the risk of brain tumors.

The widespread use of mobile phones and other [wireless communications](#) has led to concerns that the [radio frequency](#) electromagnetic radiation from mobile technologies can cause cancer and other diseases. The WHO and the EU have asked for high-quality studies to be able to answer these questions. Against this background, the COSMOS study was initiated almost 20 years ago.

"Researchers have for the first time been able to conduct a [prospective cohort study](#) that collected detailed information about participants' mobile phone use. The results show that those who spent the most time talking on a mobile phone do not have a higher risk of developing a brain tumor than others," says Maria Feychting, professor at the Institute of Environmental Medicine, Karolinska Institutet, who led the COSMOS study on [cancer risk](#).

Between 2007 and 2013, a large number of people in five countries answered detailed questions about their mobile phone use. The participants were then followed in cancer registries to record any newly developed brain tumors.

The occurrence of brain tumors among the 10% who spent the greatest total number of hours talking on a mobile phone during their lifetime did not differ from those who used the mobile phone significantly less. People who started using a mobile phone more than 15 years before answering the COSMOS questionnaire did not have a higher risk of contracting the disease than those who used a mobile phone for a shorter time.

Previous studies have had methodological problems that made it difficult to draw firm conclusions. Some studies have reported an association between mobile phone use and brain tumor occurrence. In those studies, people who had already been diagnosed with a brain tumor (cases) and healthy control subjects were contacted.

With such an arrangement, there is a great risk that the patients overestimate their previous mobile phone use compared to the healthy controls. Such memory errors may affect the results. In COSMOS, the participants were all free from nervous system tumors at the start of the study. Therefore, the disease cannot have had any effect on how participants remembered past mobile phone use.

COSMOS is the only study to date that has been able to combine a prospective cohort design with detailed information on the extent of mobile phone use. Previous cohort studies have only had information on when the participants started using mobile phones.

These studies also found no association with brain tumors, but have been criticized for lacking information on how much the participants talked on their mobile phones. COSMOS has now shown that even those who talk the most on their mobile phones do not have a higher risk of brain tumor than others.

In 2011, the WHO's cancer research institute, IARC, classified radiofrequency fields as "possibly carcinogenic." This assessment was largely based on the case-control studies that asked brain tumor patients and healthy controls retrospectively about their previous mobile phone use. The COSMOS researchers point out that the results from COSMOS will be an important contribution to the [scientific evidence](#) for future health risk assessments, but that more research is needed.

"Mobile phone technology is constantly changing and some of the

tumors we studied are very rare. Therefore, we will continue to follow the COSMOS study participants in order to allow firm conclusions about possible long-term risks," says Maria Feychting.

**More information:** Maria Feychting et al, Mobile phone use and brain tumour risk—COSMOS, a prospective cohort study, *Environment International* (2024). [DOI: 10.1016/j.envint.2024.108552](https://doi.org/10.1016/j.envint.2024.108552)

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